

CLAIMS

1. An optical disk device (1) capable of storing and ejecting an optical disk for recording or reproducing a signal on the optical disk stored therein, comprising:

5 a turntable (52) for rotatably supporting the optical disk stored;

a rotatable drive source mechanism (54) for rotatably driving said turntable (52);

a turntable raising/lowering mechanism (51c, 15) for vertically moving said turntable (52) between a lowered position in which interference with the optical disk stored or ejected is avoided and a raised position in which the optical disk stored is supportable;

10 an optical pickup (57) for recording a signal on the optical disk supported by said turntable (52) or reproducing a signal;

a pickup drive mechanism (57a) for reciprocally moving said optical pickup (57) between an inner region and an outer region of the optical disk supported by said turntable (52);

a dual-purpose drive source mechanism (62, 64, 65, 66, 67, 68) for generating a driving force for said turntable raising/lowering mechanism (51c, 15) and said pickup drive mechanism (57a); and

20 a first operation switching mechanism (58, 69) for performing a first switching operation for switching a transmission path of the driving force of said dual-purpose drive source mechanism (62, 64, 65, 66, 67, 68) from a path leading to said pickup drive mechanism (57a) to a path leading to said turntable raising/lowering mechanism (51c, 15), or vice versa,

25 wherein said first operation switching mechanism (58, 69) performs said first

switching operation by an operation independent of said optical pickup (57) under the driving force of said dual-purpose drive source mechanism (62, 64, 65, 66, 67, 68).

2. The optical disk device (1) according to claim 1,

5 wherein said dual-purpose drive source mechanism (62, 64, 65, 66, 67, 68) includes a dual-purpose motor (62), and a power transmission mechanism (64, 65, 66, 67, 68) including a gear element (64, 65, 66, 67, 68) rotating under a rotatable driving force of said dual-purpose motor (62);

 wherein said pickup drive mechanism (57a) includes a rack portion (57a) provided integrally with said optical pickup (57) for moving said optical pickup (57) under the rotatable driving force of said dual-purpose motor (62) through said gear element (64, 65, 66, 67, 68); and

 wherein said first operation switching mechanism (58, 69) includes a slide rack (58) movable under the rotatable driving force of said dual-purpose motor (62) through said gear element (64, 65, 66, 67, 68), with said rack portion (57a) having moved to a position in which the transmission path of the driving force from at least said gear element (64, 65, 66, 67, 68) is interrupted, and performs said first switching operation by moving said slide rack (58), with said optical pickup (57) placed in a fixed position.

20 3. The optical disk device (1) according to claim 2, further comprising:

 a main chassis (11);

 a disk tray (12) movable to extend out of and retract into said main chassis (11) for storing and ejecting said optical disk; and

 a traverse chassis (51) having a pivotal displacement side end portion on one end side thereof and a pivot axis side end portion on the other end side thereof, said pivot

axis side end portion being pivotably mounted to said main chassis (11) so that said pivotal displacement side end portion is movable toward and away from said main chassis (11), said turntable (52) being moved to said raised position by moving said pivotal displacement side end portion toward said main chassis (11), said turntable (52) being
5 moved to said lowered position by moving said pivotal displacement side end portion away from said main chassis (11),

wherein said turntable (52), said rotatable drive source mechanism (54), said optical pickup (57), said dual-purpose drive source mechanism (62, 64, 65, 66, 67, 68) and said first operation switching mechanism (58, 69) are provided on said traverse
10 chassis (51),

wherein said first operation switching mechanism (58, 69) further includes a trigger plate (69) moving in accordance with the movement of said slide rack (58),

wherein said turntable raising/lowering mechanism (51c, 15) includes a driven boss (51c) provided on said pivotal displacement side end portion of said traverse chassis (51), and a slider member (15) having a cam groove (15a, 15b) engageable with said
15 driven boss (51c) and provided on said main chassis (11) movably in accordance with the movement of said trigger plate (69), and

wherein the movement of said slider member (15) in accordance with the movement of said trigger plate (69) causes said driven boss (51c) moving in said cam
20 groove (15a, 15b) to move toward or away from said main chassis (11), thereby moving said pivotal displacement side end portion of said traverse chassis (51) toward or away from said main chassis (11).

4. The optical disk device (1) according to claim 3, further comprising:

25 a disk tray transport mechanism (12a) for moving said disk tray (12) to extend

out of and retract into said main chassis (11) under the driving force of said dual-purpose drive source mechanism (62, 64, 65, 66, 67, 68); and

5 a second operation switching mechanism (15c, 12b, 12c, 12d) for performing a second switching operation for switching the transmission path of the driving force of said dual-purpose drive source mechanism (62, 64, 65, 66, 67, 68) from a path leading to said pickup drive mechanism (57a) to a path leading to said disk tray transport mechanism (12a), or vice versa,

wherein said main chassis (11) is provided with a tray gear (13) having a first gear portion (13b) and a second gear portion (13a) and rotatable under the driving force of
10 said dual-purpose drive source mechanism (62, 64, 65, 66, 67, 68),

wherein said slider member (15) has a slider-specific rack portion (15d) meshingly engageable with said first gear portion (13b),

wherein said disk tray transport mechanism (12a) has a tray rack portion (12a) extending in a direction in which said disk tray (12) is extended and retracted and
15 meshingly engageable with said second gear portion (13a),

wherein said second operation switching mechanism (15c, 12b, 12c, 12d) has a tray guide groove (12b, 12c, 12d) and a boss portion (15c), said tray guide groove (12b, 12c, 12d) being provided in said disk tray (12) and including in a continuous fashion a first guide groove (12b) extending along a direction orthogonal to said direction in which
20 said disk tray (12) is extended and retracted, a second guide groove (12c) angled to said direction in which said disk tray (12) is extended and retracted, and a third guide groove (12d) extending along said direction in which said disk tray (12) is extended and retracted, said boss portion (15c) being provided on said slider portion (15) and moving in said tray guide groove (12b, 12c, 12d), and

25 wherein said first gear portion (13b) is in meshing engagement with said

slider-specific rack portion (15d) and said tray gear (13) rotates to move said slider member (15) during an interval that said boss portion (15c) passes through said first guide groove (12b); said disk tray (12) moves to extend or retract under a force of movement of said boss portion (15c) in said second guide groove (12c), thereby causing a transition
5 from the meshing engagement between said first gear portion (13b) and said slider-specific rack portion (15d) to meshing engagement between said second gear portion (13a) and said tray rack portion (12a) or vice versa during an interval that said boss portion (15c) passes through said second guide groove (12c); and said second gear portion (13a) is in meshing engagement with said tray rack portion (12a) and said tray
10 gear (13) rotates to move said disk tray (12) to extend and retract during an interval that said boss portion (15c) passes through said third guide groove (12d).

5. The optical disk device (1) according to claim 4,
wherein said first gear portion (13b) has a pitch circle radius smaller than that
15 of said second gear portion (13a).

6. The optical disk device (1) according to claim 5,
wherein said first gear portion (13b) and said second gear portion (13a) are
equal in the number of teeth to each other.

20 7. The optical disk device (1) according to claim 3,
wherein said trigger plate (69) has a tooth portion (69d), and
wherein the driving force from said dual-purpose drive source mechanism (62,
64, 65, 66, 67, 68) is transmitted through said tooth portion (69d) in the course of the
25 movement of said trigger plate (69).

8. The optical disk device (1) according to claim 7,

wherein a speed at which said slider member (15) moves said trigger plate (69) is approximately equal to a speed at which said slider member (15) is moved under the driving force from said dual-purpose drive source mechanism (62, 64, 65, 66, 67, 68) through said tooth portion (69d).

9. The optical disk device (1) according to claim 3, further comprising

an urging member (16) for urging said slider member (15) toward one end of a movable range thereof.

10. The optical disk device (1) according to claim 3,

wherein said dual-purpose drive source mechanism (62, 64, 65, 66, 67, 68) moves said optical pickup (57) once stored toward the outer region of the optical disk after power is turned on.

11. The optical disk device (1) according to claim 3,

wherein said trigger plate (69) has a malfunction prevention wall (69c) for abutting against said optical pickup (57) side or said slide rack (58) side to inhibit its own movement prior to the operation of placing said optical pickup (57) in the inner region of the optical disk and the operation of switching the transmission path of the driving force of said dual-purpose drive source mechanism (62, 64, 65, 66, 67, 68) from the path leading to said pickup drive mechanism (57a) to the path leading to said turntable raising/lowering mechanism (51c, 15).

12. The optical disk device (1) according to claim 3,

wherein a first detector (71) for detecting whether or not said disk tray (12) is in
an extended position based on a position to which said slider member (15) is moved, and
a second detector (72) for detecting a position to which said optical pickup (57) is moved
5 are provided on said traverse chassis (51) side.

13. The optical disk device (1) according to claim 12,

wherein said traverse chassis (51) is provided with a relay substrate (70), and

wherein said first detector (71) and said second detector (72) are provided on
10 said relay substrate (70).